

Mobile Communication Platform for Business Services – MOBACCES

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Abstract: The mobile communication platform – MOBACCES is dedicated to business environment being designated in principal for data transmission and access to information services. The business model on which electronic commerce component is based consists in the B2B (business to business) model dedicated to a business agent. The access to the platform is accomplished through Internet or by using wireless communication technology. The MOBACCES platform management services are oriented towards sure and correct functionalities in order to help to preserve the confidential business information. The electronic commerce component is an integrated set of hardware and software agents with specific and complementary functionalities and is characterized by reliability, high flexibility due to the administered information structures, user-friendly interface, and multimodality. In designing the electronic commerce component there have been taken into account the functional, informational, organizational, data collection logical structuring, implementation and communication aspects specific to a multi-agent system. The information system support for the management electronic commerce component of the mobile communication platform is based on distribution and interoperability. For software agent creation and for communication between them, there have been used tools as UML Methodology, Microsoft Visio, Designor SQL, .Net development environment, SQL Server, TCP/IP protocols.

Keywords: Wireless communication technology, electronic commerce, software agents

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1. Introduction

The mobile communication platform [1] for data transmissions and access to information services in business environment – MOBACCES has been developed through a national research, development and innovation project within the Romanian Excellence Research Program, by a consortium made up of three research institutes and a university.

One of the platform components is represented by the electronic commerce component. The business model, on which electronic commerce component is based, is the B2B (business to business) model dedicated to a business agent.

The electronic commerce based on the B2B model diversifies business models, develops new market types and creates added value. The business processes become more rapid, more efficient and allow the participation of many more economic agents to a business, these

benefiting from cost-reductions and time-shortening in activity deployment.

The mode of communication between the business agents and the system is performed through two principal categories of communication systems: communication through Internet by using a personal computer connected to Internet on which a browsing software with a version ≥ 6 is installed and wireless communication by using some mobile devices of the type: Personal Digital Assistant (PDA), mobile terminals, laptop.

The area considered for the development of electronic commerce component of the platform [2] covers the following actions: provision on market of products / services, ordering of products / services, commercialization of products / services, warehousing of products / services, management of electronic commerce businesses and deployment of payments.

2. Characteristics

The mobile communication platform contains an integrated set of information applications oriented to electronic commerce through which the products / services commerce is made more efficient. The quality characteristics of electronic commerce component of the platform are: reliability, high flexibility due to the managed information structuring mode, user-friendly interface and multimodality due to the diversity of devices used for registration and respectively for searches of information.

The MOBACCES platform components are grouped in 5 categories:

- Components dedicated to management of the types of users of MOBACCES platform, organizations and persons among whom the business processes specific to product provision chain are deploying;
- Components for management of product offers (registration, modification, deletion) and their searching in conformance with the business processes materialized through dynamically build research criteria;
- Components that assist management of orders (registration, modification, deletion);
- Components through which it is performed registration of information regarding payment and delivery operations as well as existing stocks;

Components through which there are assisted the process of MOBACCES platform management and the mode of communication with the platform through Internet or wireless communication.

3. Technical Architecture

From a technical point of view, the electronic commerce component is an integrated set of hardware and software agents with specific and complementary functionalities. The designed and developed software agents and hardware agents are entities with a high degree of autonomy, distributed in a network, which enables the communication among them. The agents [3] are classified in two categories: mobile agents characterized by mobility, security and autonomy and static agents characterized by cooperation with other agents and a defined intelligence level.

The usage of multi-agent system approach for the execution of functions of deployment and management in real time by software agents and hardware agents of the operations specific to the management of electronic commerce component of the mobile communication platform represents a modern and innovative action direction in e-business area. The hardware-software platform of electronic commerce component is a set of heterogeneous and distributed hardware and software agents which are modelled as multi-agent systems.

For creation of software agents and for communication between them, there have been used

tools as UML Methodology [4], Microsoft Visio, Designor SQL, .Net development environment, SQL Server [5-6], TCP/IP protocols. The component agents are grouped in functional categories [7-10] which refer a level specific to the deployed processes (figure 1).

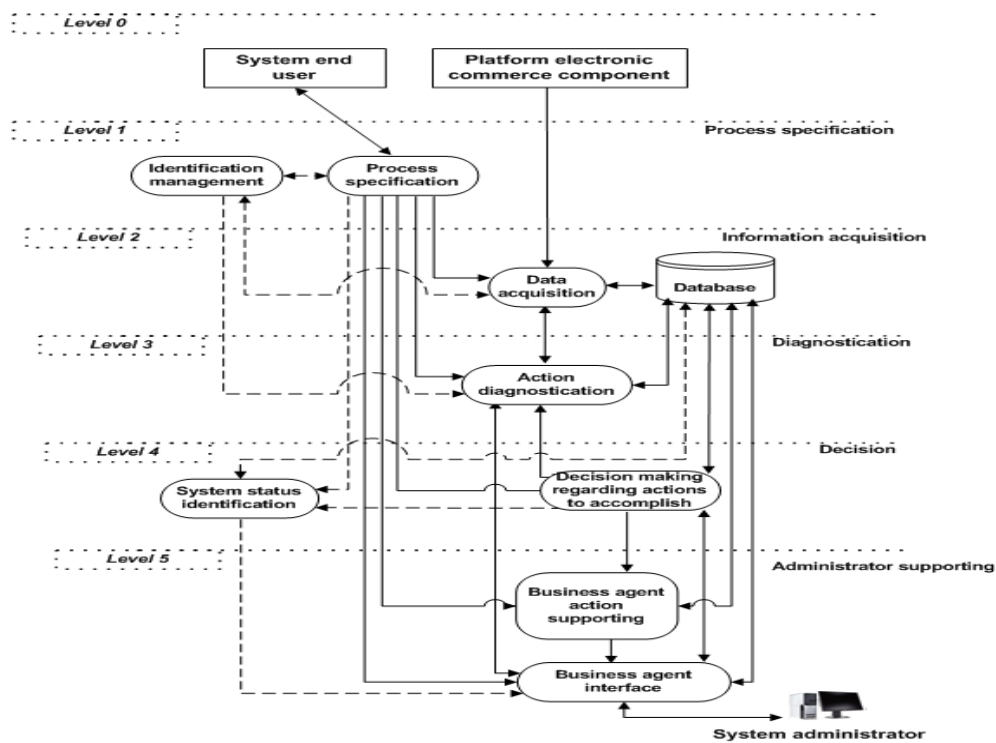


Figure 1. Multi-level and multi-agent approach of electronic commerce component of the mobile communication platform.

The electronic commerce component of the mobile communication platform contains the following agent types:

- Computers of server type on which the application software modules are installed;
- Operating system that assures the application software modules functionality;
- System of management of information structures of data specific to electronic commerce component (SQL Server);
- Database that contains structures of data and relations between them, data that are used to support the information circuit specific to electronic commerce component;
- Application software that represents information support for automation of processes specific to electronic commerce component;
- Application software that provides the business agent - electronic commerce component interface;
- Software that assures the communication at the levels of Internet and respectively of wireless communication network;
- Hardware for communication through a wireless communication network;
- Hardware for transport monitoring in product delivery process;
- Software and hardware for security assurance.

The technical architecture of electronic commerce component of the mobile communication platform [11-12] is structured on 5 levels with specific functionalities implemented in software agents and hardware agents. These levels are:

- Business agents;
- Access interface;
- Server which assures connection of business agents with the services offered by electronic commerce component;
- Application server of electronic commerce component;
- Data server of electronic commerce component.

The mode of communication between the architecture levels is highlighted in figure 2.

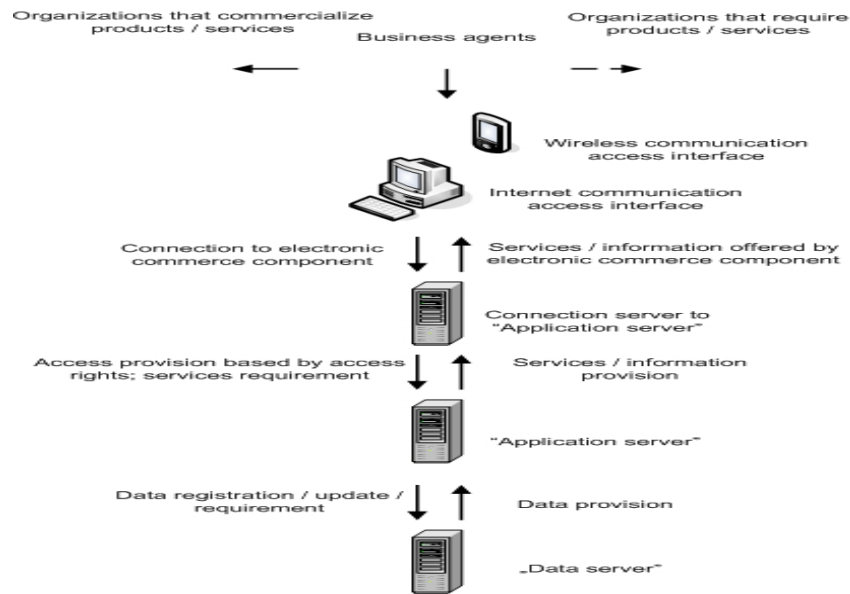


Figure 2. Communication architecture at level of electronic commerce component of the mobile communication platform.

4. Web Project Differences

The information managed by electronic commerce component of the mobile communication platform [1] is structured in the following categories:

- Business agents involved in products / services commercialization;
- Location definition elements;
- Personnel participating at business deployment;
- Elements representing the business subject;
- Documents by which the business is launched or which represent information support for business deployment / business deployment surveying;
- Information regarding the status at one given moment of some elements participating at business deployment.

The types of economic agents that perform business operations through electronic commerce component of the platform are: suppliers, vendors, clients (figure 3). The localization aspects are defined by the entities: address, territories, regions. The personnel participating at business deployment is defined by the entity: employees (supplier employees, vendor employees, client employees). The elements representing the business subject are highlighted by the entities: products, services. The documents by which the business is launched or by which the business is deployed are: offers (of products, of services), orders (for products, for services), proof of payment records (invoices for payment requirement and payment order or electronic payment documents for payment accomplishment). The status at a given moment of certain elements participating at business deployment is defined by product offer characterized by the entities: product category, stock (quantity available at a given moment), price.

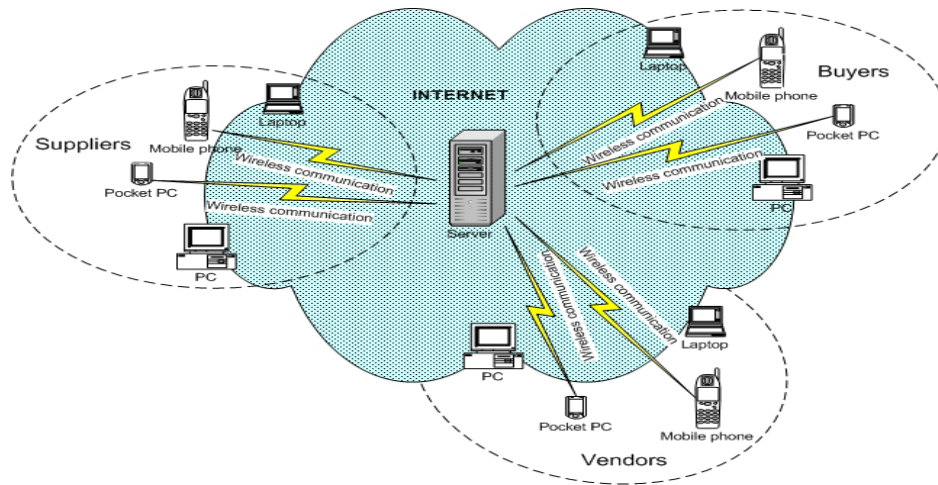


Figure 3. Organizational architecture of electronic commerce component of the mobile communication platform.

5. Example of Interfaces

Hereinafter, there are presented some of the MOBACCES platform interfaces dedicated to Internet access from computer workstations [1] (figures 4 and 5) and from PDA.

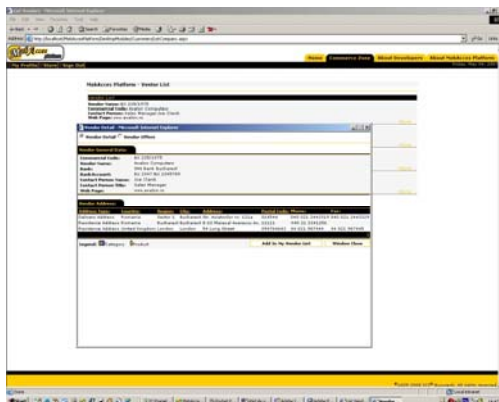


Figure 4. Vendor information.



Figure 5. User registration.



Figure 6. Offer search.



Figure 7. Product details.



Figure 8. Payment data.

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